

Title (en)

Reversible fuel cell system and method for operating a fuel cell system

Title (de)

Reversibles Brennstoffzellensystem und Verfahren zum Betrieb eines Brennstoffzellensystems

Title (fr)

Système de pile à combustible réversible et procédé de contrôle d'un tel système

Publication

**EP 3054519 A1 20160810 (EN)**

Application

**EP 15153616 A 20150203**

Priority

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Abstract (en)

The present invention concerns a fuel cell system. The fuel cell system comprises at least one reversible fuel cell (2) arranged to cyclically or alternately operate in a fuel cell mode to generate electrical energy and reactant product from fuel and an oxidant and in an electrolysis mode to generate hydrogen and an oxidant from the reactant product, a pressure boiler (13), the pressure boiler (13) including a reactor (14) for generating hydrocarbon fuel, a synthesis gas storage (11) connected with a fuel electrode inlet (3) of the reversible fuel cell (2) via a synthesis gas conduit (12), a fuel electrode outlet (4) of the reversible fuel cell (2) connected to a reactant product conduit (10), an oxidant storage (53), connected to the oxidant electrode inlet (5) of the reversible fuel cell (2) via an oxidant conduit (7), an oxidant electrode outlet (6) connected to an oxidant electrode exhaust conduit (9), and a heat exchanger system for receiving and releasing heat, wherein - the synthesis gas conduit (12), the reactant product conduit (10), the oxidant conduit (7) and the oxidant electrode exhaust conduit (9) are guided through the pressure boiler (13), and wherein - the pressure boiler (13) is integrated in a water transport conduit (30).

IPC 8 full level

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CPC (source: EP)

**C25B 1/04** (2013.01); **C25B 15/02** (2013.01); **C25B 15/08** (2013.01); **H01M 8/186** (2013.01); **Y02E 60/36** (2013.01); **Y02E 60/50** (2013.01); **Y02P 20/129** (2015.11)

Citation (search report)

- [A] WO 2004086585 A2 20041007 - ION AMERICA CORP [US], et al
- [A] BUTTLER, A. ET AL.: "a detailed techno-economic analysis of heat integration in high temperature electrolysis for efficient hydrogen production", INT. JOURNAL OF HYDROGEN ENERGY, vol. 40, 13 November 2014 (2014-11-13), pages 38 - 50, XP002740645

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Designated contracting state (EPC)

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